PAUL SHANKLAND, Ph.D., Director

U. S. Naval Observatory Flagstaff Station

Dr. Paul D. Shankland, a native of Greensboro, North Carolina, graduated from the U.S. Naval Academy in 1983 with a Bachelors degree in pure mathematics. During his subsequent 25 years of active duty, he earned a masters degree in astronomy (with distinction) from the University of Western Sydney, and his Ph.D. in Astronomy from James Cook University. His thesis research was on optical and millimeter radio detections, and dynamic astrophysics of Earth-like planets and Kuiper belts about M-dwarf stars.

On graduation from USNA Dr. Shankland served aboard guided missile destroyer USS SELLERS (DDG-11), where he earned the Surface Warfare Officer designation and participated in Persian Gulf protection operations – as the ship's Deck Officer, Combat Information Center/Electronic Warfare Officer, Gunnery Liaison Officer, Self Defense Force Commander, and NUCWEPS Security Officer. In 1986 he laterally transferred to the aviation community and earned his Wings, becoming an E-2C *Hawkeye* Carrier Early Warning Command & Control pilot. Dr. Shankland served in squadrons aboard carriers USS FORRESTAL (CV-59) and USS GEORGE WASHINGTON (CVN-73), where he served in the First Gulf War, several subsequent middle-Eastern combat operations, and in combat in the Adriatic Sea and Kosovo/Bosnia. He served as Powerplants, Aircraft Division, Safety, Personnel, Administrative, and Aircraft Maintenance officers. He was a Carrier Aircraft Commander and Strike Lead, while becoming carrier pilot "Top Hook" twice -- and was nominated the 1991 "Hawkeye of the Year".

Dr. Shankland also served as Administrator and Instructor pilot at VAW-120, and then Instructor, Top Secret Control/Security Manager, wing auditor, and Wing Administrator, at Carrier Airborne Early Warning Wing Atlantic. From 1996 to 1999, then-Commander Shankland served Joint Interagency Task Force East's Coast Guard admiral for Central/South American special interagency operations. He returned to carrier operations in 1999, joining USS THEODORE ROOSEVELT (CVN71) as the Strike Operations Officer where he concurrently flew with VF-102 (*Tomcats*) and HS-11 (*Seahawk* Helicopter Combat Search and Rescue). In 2001, Shankland led the carrier's Second Gulf War planning effort for its combat deployment to Afghanistan.

As 2001 concluded, Dr. Shankland was appointed to become Executive Officer, then Commanding Officer of Strike Training Squadron *NINE* (VT-9), the *Tigers* -- the Navy's largest aviation squadron; numbering 550 members and $2.2 Billion in assets (aircraft). VT-9 flew T-2C Buckeyes and T-45C Super Goshawks to train tactical carrier strike and fighter pilots. In 2004 Dr. Shankland was appointed to the *U.S. Naval Observatory*, as Director of Space Acquisitions, Programs, Plans & Requirements (N5/N8). At USNO, he oversaw the scientific development, requirements, programmatics and funds sourcing of Astrometric, Earth Orientation, Celestial Applications, and Atomic Time/GPS programs. During his uniformed career, Dr. Shankland earned military subspecialties in Manpower resourcing, Command and Control (C2), and was designated a Space Professional. He retired from the flight suit in 2008, with 4100 hours in 31 aircraft types, 454 arrested landings on 12 aircraft carriers, and had earned 42 medals, decorations, and campaign awards.

In 2008, Dr. Shankland was appointed to become the 6th Director of the *U.S. Naval Observatory Flagstaff Station* (NOFS) -- a 287-acre astrophysical dark-sky facility founded in 1955, which operates on a 7760-ft volcanic peak in alpine northern Arizona. Dr. Shankland's astronomers observe celestial data to create DoD star catalogs, celestial reference frames, and parallaxes; detect, discover and assess celestial events (for example discovering Pluto's moon, brown dwarfs, exoplanets, and unusual stars); provide orbital and interplanetary navigation data for satellites; and develop cryogenics, adaptive optics, and advanced infrared/optical detectors, elements and instruments. NOFS operates 1.55-meter, 1.3-meter, 1-meter aperture and other robotic telescopes – and the 437-meter (world's largest) *Kenneth Johnston Navy Precision Optical Interferometer* (NPOI) array. In 2009 NOFS began preparations for four additional 1.8-meter telescopes at NPOI on Anderson Mesa. Dr. Shankland is the Senior Naval Representative in Arizona.

During his career, Dr. Shankland conducted diverse research endeavors like the Global Exoplanet M-dwarf Search-Survey (GEMSS) - using the Very Large Array, the Australia Telescope Compact Array (ATCA), the Giant Metrewave Radio Telescope (GMRT), Lick Observatory, Perth Observatory, the Spitzer Space Telescope, and the Naval Observatory. He also designed and built the airborne Tactical Observatory for Photometry of Astronomical Targets (TOP-hAT) and other optics, cameras, instruments and electronics. He is lead author of several DoD-white and academic astrophysics papers, and developed requirements for both NPOI and the Joint Milli-Arcsecond Pathfinder Satellite.

Dr. Shankland is a member of the *American Astronomical Society*; and *Divisions of Planetary Science, Historical Astronomy* and *Dynamical Astronomy*. He is also a member of the *American Institute of Physics*; and the *International Astronomical Union*, serving there on Commissions for Celestial Mechanics & Dynamical Astronomy, Extrasolar Planets, Fundamental Astronomy, History of Astronomy, and Stellar Photometry & Polarimetry. Dr. Shankland is also a member of the: *Institute of Navigation*, *Navy Tailhook Foundation*, *Professional Association of Dive Instructors*, *International Sled Dog Racing Association,* and *Scottish-American Military Society* -- and is a civilian single & multiengine instrument flight instructor and regional airport commissioner. Owners of an antique biplane, Paul, spouse Amanda and 7 children are members of the *Experimental Aircraft Association*, *International Aerobatics Club, Vintage Aircraft Association*, and *National Waco Club*.